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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,642	05/27/2005	David N. Roundhill	US020471US	4312

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EXAMINER	
BEKELE, MEKONEN T	
ART UNIT	**PAPER NUMBER**
2624	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/536,642	ROUNDHILL ET AL.	
	Examiner	Art Unit	
	MEKONEN BEKELE	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 June 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-35_ is/are pending in the application.

4a) Of the above claim(s) _20-27 and 31-35_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-19 and 28-30_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _27 May 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _05/27/2005_.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-35 are pending in this application

2. Claims 20-27 and 31-35 are cancelled on [06/30/2008]

Priority

3. Applicant's claim for domestic priority under 35 U.S.C 119(e) is Acknowledge based on the Provisional Application Serial No. 60/430,226, filed on December 2, 2002

Drawings

4. The Drawings filed on 05/27/2005 are accepted for examination

Information Disclosure Statement

5. The information discourser statements field on 05/27/2005 in compliance with the provisions of 37 CFR 1.97, and have been considered and copies are enclosed with this Office Action

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims1-19 and 28-30 are rejected under 35 U.S.C. 102(a) as being anticipated by

Sumanaweera, US Patent No. 6475149 B1, published on Nov. 2, 2002

As to claim 1, Sumanaweera teaches A method of capturing an image using an ultrasound system **(Fig. 1, col.2 lines 15-16, A Vessel border detection method and system using an ultrasound system. The detected borders are displayed on the DISPLAY 26.** Capturing an image **corresponds to detecting and displaying the Vessel border,** and the image **corresponds to the vessel border)**, comprising:

surveying the image to collect motion data **(Fig.1, col.2 line 25-26, col.3 lines 23-24, the Doppler processor 18 detects a Doppler data that representing flowing fluid of the Vessel border**. Thus surveying the image to collect motion data **corresponds to use Doppler processor to detect and store Doppler data in a memory 24,** the motion data **corresponds to Doppler data);**

analyzing the motion data to identify a flow in the image (**col.3. lines15-18 and 22-25, a B-mode processor detects tissue data of the vessel border while a Doppler processor 18 detects Doppler data representing flowing data of the vessel border.** Analyzing the motion data to identify a flow in the image **corresponds to use B-mode processor and Doppler processor to identify the flow and non flow data of the vessel border);**

scanning a limited region of the image containing the flow with a flow imaging technique (**col.3 lines 23-25, lines 51-55**, **the Doppler processor 18 detects Doppler data representing flowing fluid (col3. lines 23-25) of the vessel (see Fig.3), and the scan converter formats the Doppler data for display or storage (col3. lines 51-55).** The limited region of the image containing the flow **corresponds to the vessel**, the flow imaging technique **corresponds to the Doppler data processing technique**, scanning **corresponds to acquiring Doppler data to display**).

As to claim 2, Sumanaweera teaches surveying step comprises the step of collecting a sample of color flow data (**col. 4 lines 51-55, the composite data is checked to determine whether the color Doppler image data included in the composite image**. The sample of color flow data **corresponds to the color Doppler image data).**

As to claim 3, Sumanaweera teaches surveying step comprises the step of collecting contour data **(Fig.1, col.2 line 25-26, col.3 lines 23-24, the Doppler processor 18 detects a Doppler data that representing flowing fluid of the Vessel border**. Thus collecting contour data **corresponds to use Doppler processor to detect and store Doppler data in a memory 24,** the contour data **corresponds to the Doppler data, and the** contour **corresponds to the Vessel border).**

As to claim 4, Sumanaweera teaches the analyzing step generates a motion map that identifies flow and non-flow regions (**Fig. 3, col.3 lines 17-19 and 23-25, the Doppler processor 18 detects Doppler data representing flowing fluid (col3. lines 23-25) of the vessel (see Fig.3 element 48), while a B-mode processor 16 detect tissue data (Fig. 3 element 50). Both Doppler data and tissue data are plotted and analyzed using a curve fitting algorithm (col.5 lines 18-20).** Generates a motion map that identifies flow and non-flow regions **corresponds to use the curve fitting algorithm to plot both B Mode data and the Doppler data,** the flow and non-flow regions **corresponds to border 48 and 50 of Fig.3 respectively**).

As to claim 5, Sumanaweera teaches the flow imaging technique includes a technique selected from the group consisting of: color flow **(col. 4 line 52: color Doppler image that**

representative of Doppler velocity), time domain correlation (**col. 3 lines 30-32**, **the velocity, energy, power of a fluid is correlated with time**), speckle tracking(**detecting vessels border**), strain imaging (**col.5 line 64**, **imaging vessel or imaging interior portion of a patient see abstract**), pulse wave Doppler, and continuous wave Doppler (**col.4 line 53 Doppler velocity corresponds to** continuous wave Doppler**).**

As to claim 6, Sumanaweera teaches the flow is associated with a valve in a heart (**col. 1 lines 55-54, Borders for other fluid regions in a patient may be detected, such as a heart border or other organ borders**).

As to claim 7, Sumanaweera teaches the flow indicates a blood vessel (**co. 2 lines 33-34).**

As to claim 8, Sumanaweera teaches the scanning step uses multi-line beamforming (**Fig. 1 element 14, col.3 lines 6-8).**

As to claim 9, Sumanaweera teaches the flow is periodically tracked (**col.3 lines 7-10, the analog or digital circuits of beamforme generates a periodic waveforms based on the sampling rate of the converter. Thus the transmitted wave form signal is a periodic signal with predetermined period**) and the limited region of the image containing the flow is automatically adjusted (**Fig. 3, col. 5 lines 29-30, the borders 48, 50 of the vessel 44 are detected automatically by the processor 22.** The region of the image containing the flow **corresponds to the Vessel borders 48, 50).**

As to claim 10, Sumanaweera teaches the limited region for acquisition **(col. 5 line 63-64, imaging vessels of an organ, such as the brachial artery,** the limited region **corresponds to the vessels)** is a region selected from the group consisting of a 3D pie slice, a cube, an arbitrary shape (**col. 5 line 62-63, heart, brachial artery**), and a collection of shapes (**col. 5 lines 65-66, heart or heart or other fluid filled or fluid surrounded organs**).

As to claim 11, Sumanaweera teaches the scanning step includes adjusting a set of acquisition parameters **(col. 5 lines 30-35, the method includes different embodiment for example in one embodiment a center of gravity of Doppler data is identified as an approximate center of the vessel or organ.** Adjusting a set of acquisition parameters **correspond to approximate center of the vessel or organ)** selected from the group consisting of b-mode line densities **(col. 3 lines 17-18**, **B- mode may be compressed or filtered.** Adjusting a set of acquisition parameters corresponds to **compressing or filtering**), color flow line densities (**col. 4 line 51-52, the color Doppler**), pulse repetition frequency **(col. 3 lines 6-10, the beamformer for generating a transmit wave, and output a radio frequency data.** Adjusting a set of acquisition parameters **corresponds to transform the signal into a radio frequency data**, and the pulse repetition frequency **corresponds to the radio frequency**), and ensemble length.

As to claim 12, Sumanaweera teaches an ultrasound system (**Fig. 1, col.2 lines 15-16, A Vessel border detection method and system using an ultrasound system**) comprising:

a survey system for collecting motion data from a target image (**Fig.1, col.2 line 25-26, col.3 lines 23-24, the system includes the Doppler processor 18 detects a Doppler data**

that representing flowing fluid of a Vessel border or organ. These data are analyzed and displayed on the DISPLY 26. The motion data **corresponds to Doppler data,** the target image **corresponds to the Vessel border or organ);**

a segmentation system (**Fig. 3, col.3 lines 17-19 and 23-25, A system that separate the flowing fluid data region and tissue data region using Doppler processor18 and B-mode processor 16 respectively.** Segmentation **corresponds separation fluid data region and tissue data region)** for mapping a region of flow within the image based on the motion data (**col. 5 lines 10-12 and 55-60**, **the Doppler data that representing flowing fluid can be plotted using predetermined curve fitting algorithms);**

a flow acquisition system that automatically limits the collection of flow image data within the image to the region of flow (**Fig. 3, col. 5 lines 29-30, the borders 48, 50 of the vessel 44 are detected automatically by the processor 22.** The flow acquisition system **corresponds to the processor 22,** the region of flow **corresponds to Vessel borders 48, 50,** and the collection of flow image data **corresponds to the Doppler data).**

As to claim 13, Sumanaweera teaches the motion data comprises color flow data **(col. 4 lines 51-55, the composite data is checked to determine whether the color Doppler image data included in the composite image**. The sample of color flow data **corresponds to the color Doppler image data).**

As to claim 14, Sumanaweera teaches the motion data comprises contour data **(Fig.1, col.2 line 25-26, col.3 lines 23-24, the Doppler processor 18 detects a Doppler data that representing flowing fluid of the Vessel border**. Thus the contour data **corresponds to the Doppler data,** and the contour **corresponds to the Vessel border).**

As to claim 15, Sumanaweera teaches the flow acquisition system collects data using an imaging technique selected from the group consisting of: color flow **(col. 4 line 52: color Doppler image that representative of Doppler velocity)**, time domain correlation (**col. 3 lines 30-32, The velocity, energy, or power of a fluid are correlated with time**), speckle tracking(**detecting vessels border**), strain imaging (**col.5 line 64**, **imaging vessels**), pulse wave Doppler, and continuous wave Doppler (**col.4 line 53 Doppler velocity corresponds to** continuous wave Doppler**).**

As to claim 16, Sumanaweera teaches the flow acquisition system uses multi-line beamforming (**Fig. 1 element 14, col.3 lines 6-8).**

As to claim 17, Sumanaweera teaches the flow is periodically tracked (**col.3 lines 7-10, the analog or digital circuits of beamforme generating a periodic waveforms based on the sampling rate of the converter. Thus the transmitted wave forms has predetermined period**) and the limited region of the image containing the flow is automatically adjusted(**Fig. 3, col. 5 lines 29-30, the borders 48, 50 of the vessel 44 are detected automatically by the processor 22.** The region of the image containing the flow **corresponds to Vessel borders 48, 50).**

As to claim 18, Sumanaweera teaches region of flow (**col. 5 line 63-64, a vessels of an organ, such as the brachial artery**) is a region selected from the group consisting of a 3D pie slice, a cube, an arbitrary shape (**col. 5 line 62-63, heart, brachial artery**), and a collection of shapes (**col. 5 lines 65-66, heart or heart or other fluid filled or fluid surrounded organs)**.

As to claim 19, Sumanaweera teaches the flow acquisition system includes a set of acquisition parameters **(col. 5 lines 30-35, the method includes different embodiment for example in one embodiment a center of gravity of Doppler data is identified as an approximate center of the vessel or organ.** A set of acquisition parameters **correspond to approximate center of the vessel or organ)** selected from the group consisting of b-mode line densities (**col. 3 line 17-18, B- mode may be compressed or filtered.** Adjusting a set of acquisition parameters **corresponds to compressing or filtering**), color flow line densities (**col. 4 line 51-52, the color Doppler**), pulse repetition frequency **(col. 3 lines 6-10, the beamformer for generating a transmit wave, and output a radio frequency data.** Adjusting a set of acquisition parameters **corresponds to transform the signal into a radio frequency data**, and the pulse repetition frequency **corresponds to the radio frequency**), and ensemble length.

As to claim 28, Sumanaweera teaches A program product stored on a recordable medium for optimizing ultrasound data (**col. 2 lines 55-60, col. 3 lines 51-55**), comprising:

means for receiving survey data representative of motion in a volume of ultrasound data**(Fig.1 element 12, col.2 lines 60-65**, **the transducer 12 includes a transmit surface for transmitting and receiving ultrasound energy into and from a patient or animal.** The means for receiving survey data **corresponds to the transducer 12);**

means for mapping the survey data into a motion map that indicates flow and non-flow regions (**Fig. 3, col.3 lines 17-19 and 23-25, the Doppler processor 18 detects Doppler data representing flowing fluid (col3. lines 23-25) of the vessel (see Fig.3 element 48), while a B-mode processor 16 detect tissue data (Fig. 3 element 50). Both Doppler data and tissue data are plotted and analyzed using a curve fitting algorithm (col.5 lines 18-20). The**

means for mapping the survey data into a motion map that indicates flow and non-flow regions **corresponds to the Doppler processor 18 and B-mode processor 16**);

means for limiting the collection of flow data to the flow regions (**col. 5 lines 29-30**, **in one embodiment, the borders 48, 50 of the vessel 44 are detected automatically by the processor 22.** The means for limiting the collection of flow data to the flow regions **corresponds to the processor 22).**

As to claim 29, Sumanaweera teaches means for collecting grayscale data interspersed with flow data (**col.1 lines 46-50, different techniques for identifying fluid or tissue data are used, such as magnetic resonance imaging, CAT scan, x. –ray.** The means for collecting grayscale data **corresponds to the magnetic resonance imaging, CAT scan, x–ray devices**).

As to claim 30, Sumanaweera teaches the collection of flow data is achieved with a technique selected from the group consisting of: color flow **(col. 4 line 52: color Doppler image that representative of Doppler velocity)**, time domain correlation (**col. 3 lines 30-32**, **The velocity, energy, or power of a fluid are correlated with time**), speckle tracking(**detecting vessels border**), strain imaging (**col.5** line 64, **imaging vessels**), pulse wave Doppler, and continuous wave Doppler (**col.4 line 53 Doppler velocity corresponds to** continuous wave Doppler**).**

Conclusion

The Prior art made of record

US Patent Pub. No. 6,475,149

The prior art made of record and not relied up on is considered pertinent to applicant's disclosure

US Patent No. 6,491,636

US Patent No. 6,106,466

US Patent No. 6,500,125

US Patent Pub. No 2006/0074309

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Mekonen Bekele whose telephone number is 571-270-3915. The examiner can normally be reached on Monday -Friday from 8:00AM to 5:50 PM Eastern Time.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor LE BRIAN can be reached on **(571) 272-7424.** The fax phone number for the organization where the application or proceeding is assigned is 571-237-8300. Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished application is available through Privet PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have question on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217-919 (tool-free)

/MEKONEN BEKELE/
Examiner, Art Unit 2624
July 30, 2008
/Brian Q Le/

Primary Examiner, Art Unit 2624